Invocation

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The secret of a good sermon is to have a good beginning and a good ending, then having the two as close together as possible.

- George Burns

- I would like to take my text from the 27th chapter of Genesis (with apologies to Beyond the Fringe and Alan Bennett):

  - "My brother Esau is an hairy man, but I am a smooth man"

- Sadly, it appears not to be appropriate.

- Instead, let's focus on the work at hand.

Great things are not done by impulse, but by a series of small things brought together.

-Vincent van Gogh

- We can probably agree that:

  - the basic technologies we need already exist (data storage, data access, relational databases, machine communication, networking....)

  - it's difficult to imagine what the "system science" meta-VO will look like, but

  - if we build our parts of it to work *together*, the foundation should be sound

When love and skill work together, expect a masterpiece.

- John Ruskin (1819 - 1900)

- Each of us is enthusiastic about building a VxO that works for the kind of science we do

- If we combine that with agreement about standards, we should be able to produce a functional HPS VO without too much trouble

  - prototypes already exist

All parts should go together without forcing. You must remember that the parts you are reassembling were disassembled by you. Therefore, if you can't get them together again, there must be a reason. By all means, do not use a hammer.

- IBM maintenance manual, 1925

- Don't force what works for one VO on another; instead concentrate on the common interfaces:

  - communication

  - metadata translation

- Test for usability by non-experts

It takes your enemy and your friend, working *together*, *to hurt you: the one to slander you, and the other to get the news to you.*
                                                                — Mark Twain, *Following the Equator* (1897)
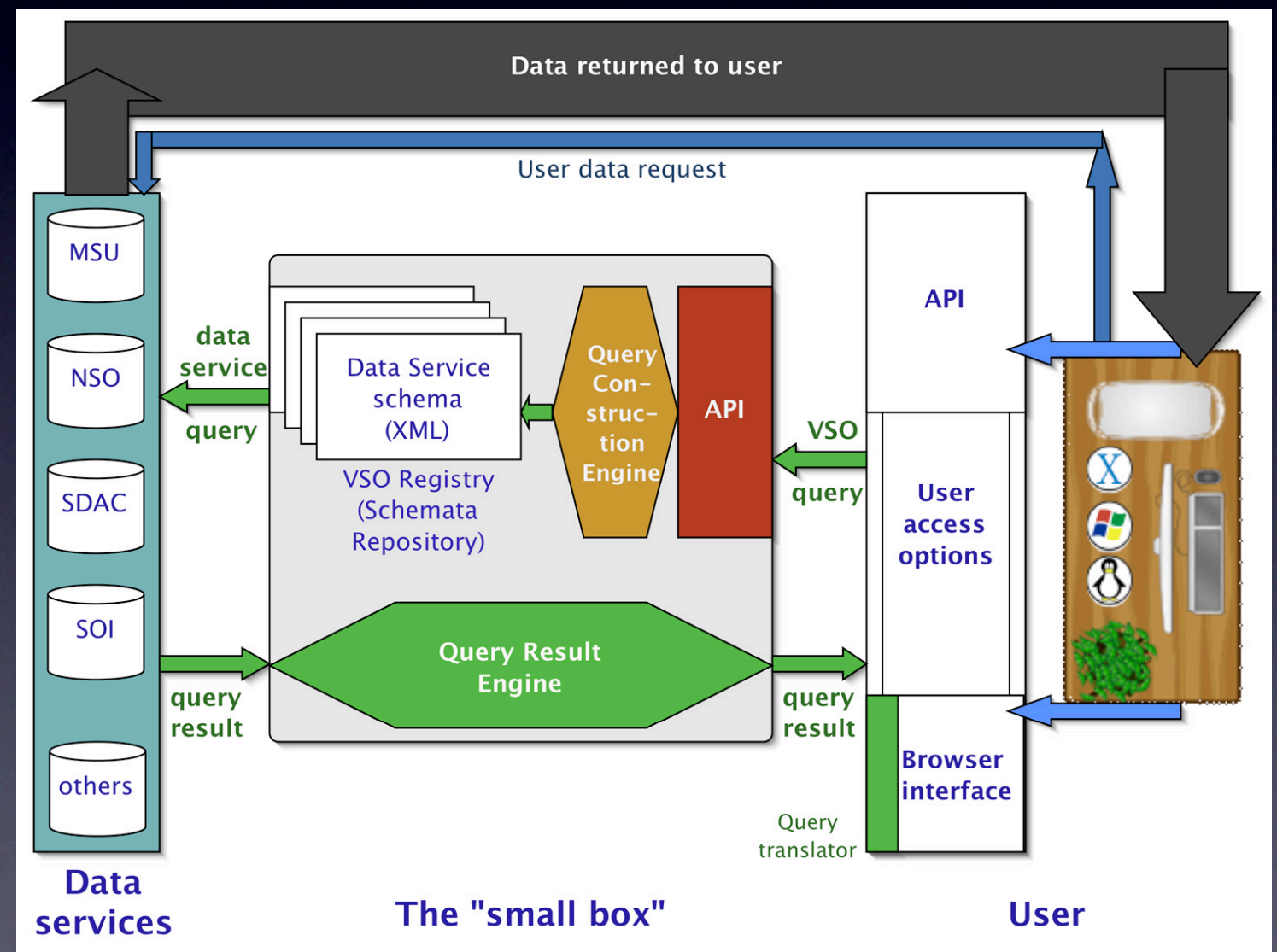
- Most of us are already using data in one or another of a small number of standard formats

- The software exists to translate among those formats, using XML as an intermediate step

  - XML can also be used for a verbose data representation (VOTables)

- Format translation should be part of any HPS VO

The reason why lovers are never bored together is that they are always talking of themselves.

- Duc de la Rochefoucauld (1613 - 1680)

- Need to establish a forum to share our ideas, both general and technical

  - What does your "box" look like?

Data returned to user

User data request

MSU

NSO

SDAC

SOI

others

Data services

data service

query

query result

Data Service schema (XML)

VSO Registry (Schemata Repository)

Query Construction Engine

API

Query Result Engine

The "small box"

API

VSO

query

User access options

query result

Browser interface

Query translator

User

It will take mind and memory months and possibly years to gather together the details....

- Mark Twain (1896)

- **Hard-won lessons (from a VSO programmer; YMMV)**

  - Figure out what the users need

  - Agree on standards

  - Design the API first, and plan for change

  - Release something

  - Repeat

  - Pitfalls: SOAP (design WSDL first), proprietary data, allowing agreement on terminology to lag s/w development

We must learn to live together as brothers or perish together as fools.

- Martin Luther King Jr.

We must all hang together, or assuredly we shall all hang separately.

- Benjamin Franklin

- Grand experiment of HPS VO's is unlikely to be funded for very long if we don't find a way of working *together*, so

  - My success is dependent on your success

  - Corollary: I will do whatever I can, within my resources, to see that you succeed